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Providing a Comprehensive Theoretical Framework of Blockchain's Potential in Finance, Accounting and Auditing

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Abstract

Blockchain is an emerging technology that, despite its ever-increasing development, a clear and complete theoretical framework has not yet been provided for it. According to this, the purpose of this research is to fill the knowledge gap, complete and expand the scientific field in order to rationally and systematically analyze the topics related to this Blockchain technology. Therefore, with a theory-oriented approach, it examines related literature, perspectives, theories and models in 137 library sources. The results of this research show the existence of 38 related theories and models; which is a set of processes, tools, emotions, feelings, beliefs, attitudes, motivations, conditions, value, importance, necessity, dependence, preference, individual factors, social factors, economic factors, political factors, background factors and professional principles in the field of finance, accounting and auditing. These results have been obtained using the coding method in Atlas.ti 9 software, which has finally led to the presentation of a complete theoretical framework model of blockchain potential.

Keywords

Blockchain Technology, Conceptual Framework, Theoretical Framework, Blockchain's Potential

1. Introduction

Today's world is a field of tremendous change and accelerated dynamics that has brought the age of uncertainty to the fore. The consequences of the uncertainty and the needs arising from this source are the creators of the technological and digital world, which is rapidly expanding and surrounding more and more various scientific and practical fields. This modernization requires the recognition of the emerging trends and their consequences. Therefore, one of the characteristics of modernity and post-modernity is the development of different theories in the relevant field; because the basis of this era is to stay away from absolutism and break away from one-dimensional theories. The use of effective and influential and interdisciplinary perspectives, theories and models resulting from the knowledge and revelations related to a subject can investigate and recognize the complexities and multifaceted aspects of a subject in different fields and its effects on ecosystems and different actors of the network and provide the necessary mechanisms and help develop knowledge. It can also provide a new perspective about the emerging trends and the basics of acceptance, improvement and evolution of the subject as a prerequisite for awareness and appropriate decision making.

For these years, research published on Blockchain technology has been growing, but unfortunately, there is still a lack of theoretical basis (Khan and Yu, 2021). Based on this, in order to achieve the knowledge and epistemological goals resulting from accounting and auditing in the context of Blockchain technology, in this article we will describe the related theories, perspectives, models and approaches; to finally provide a complete theoretical framework for this issue.

Literature Review

Evolution Theory (ET)

The theory of evolution states that all types of organisms have arisen and developed as a result of the natural selection of heritable and small species that have increased the individual's ability to compete, live, and reproduce (Pourya Nesab, 2013). Due to its emphasis on evolution and natural selection, this theory has made its way to other fields of knowledge where competition reigns, such as sociology, economics, and business (Pourya Nesab, 2013). Accordingly, throughout history, there have been great evolutionary leaps, which have pushed life forward (Maisonneuve, 2022). The gig economy, frequent job changes, new communication methods, globalization of the workforce, and advanced technologies are among the factors that have contributed to the changes in the dynamics of organizations in recent years. Above all, technological disruption, which the Covid-19 pandemic has significantly accelerated in recent years; and it led to changes in social and organizational behavior in the next several years (Mckinsey & Company, 2020).

The world has now entered what some call the age of "digital Darwinism". Digital Darwinism is indebted to the theory of evolution. In this day and age, technology is evolving rapidly for many people and organizations (ACCA, 2013). Transformative advances in hardware, software, and sheer proliferation of data are rapidly pushing diverse forces into more and more areas of human life. This leads to a kind of “digital Darwinism” – a global phenomenon that excludes some businesses and allows others to secure a dominant market share, potentially affecting the world's geopolitical order. A race for dominance that is redefining winners and creating new opportunities for investors. This digital Darwinism is like an evolutionary process that makes changes at the cellular level and changes the world we live in (Maisonneuve, 2022).

According to Digital Darwinism, emerging technologies are fundamentally changing the technology and business scenes. This recent wave dates back to the second half of the 2000s, which started with cloud computing (El Sibai et al, 2020) and fourth generation 4G mobile networks (Bou Abdo & Demerjian, 2017) and extended to the Internet of Things (IoT), artificial intelligence, data Big and blockchain has arrived. Blockchain as our main topic and promising actor, in addition to being the child of

digital daurinism; It has also evolved within itself. It is the corresponding evolution of development and its different stages of application in different domains that creates a deeper and more vital connection in the real world. Accordingly, just like the Internet, blockchain can also be divided into evolutionary stages. Blockchain 1.0 stood for payment transactions using cryptocurrencies such as Bitcoin. Blockchain 2.0 enabled ownership records and automatic execution of contracts; which is currently being tested in pilot projects and numerous start-ups - with promising prospects. The rest of Blockchain 3.0 extracts structured, processed and predictive information from blockchain transaction history to support decisions through blockchain interaction with big data and predictive analytics. Blockchain 4.0 is a business-friendly environment for creating and running improved decentralized applications, seeking greater scalability, increased speed, and greater usability. Blockchain 5.0 seeks to integrate new technologies and blockchain capabilities in order to innovate and develop communications and improve efficiency, effectiveness and economy in various industries and professions and respond to the needs of users.

On the other hand, Smart contracts in blockchain can evolve and be altered over time if prescribed conditions are met. smart contracts not only can have the same level of detail as physical contracts, but they also have the ability to achieve objectives that traditional contracts cannot, including negotiating price and/or monitoring inventory levels (Cognizant, 2016)

Accountants have always exploited emerging technologies to help them to complete their tasks more accurately, quickly or simply: from the incised clay tablets of the Sumerian scribes, through the adding machines of the 19th century, to the calculators and computers of the 20th century. All these technological developments were simple by comparison with the myriad technologies that are now rapidly reshaping the worlds of business and accountancy. Now, blockchain technology has taken a big step in the evolution of accounting and auditing by providing many capabilities and providing a platform for more useful, relevant, complete, accurate, transparent, faster, more convenient, desirable, more reliable and more efficient accounting and auditing processes and reports. Although these professions are still babies at this stage of blockchain evolution, they will grow rapidly. On the other hand, this will mark an evolution in the character of accountants and auditors by learning new business models in the profession and work processes.

Agency Theory (AT)

The agency relationship can be defined as a contract between principal and agent whereby the agent acts on principals' behalf (Jensen and Meckling, 1976). Generally believed that in theory, the shareholders being the owners of the firm control its activities but in practice, control often lies in the hands of directors as the large modern corporate has a diffuse and fragmented set of shareholders. The separation of ownership and control voices that the management team may pursue objectives attractive to them, but which are not necessarily beneficial to the shareholders this is termed "managerialism". This conflict is known as the principal agent problem i.e. Agency problem (Financial Analysis Revised, 2007). However, Agency problems originate from the lacking trust between principals and agents (Jensen and Meckling, 1976).

Blockchain can be seen as a non-pecuniary open innovation ecosystem that will help to circumvent opportunistic behaviours that are frequently exercised by a smaller group of individuals in a society, a classic. The same technology can be used in private or semi-private settings where the main objective is to diminish market uncertainties and asymmetry of information between agents. This results in a reduction of transaction costs and a reformulation of the role of the middleman agent (Torres de Oliveira, 2017). Therefore, Blockchain technology facilitates a substantial increase in the efficiency of agency relationships in orders of magnitude and lowers agency costs equally substantial in orders of magnitude. Blockchain technology provides formal guarantees to participating principals and agents that address agency problems in corporate governance

comprehensively. Because of the blockchain guarantees, the technology allows a qualitatively different solution for agency problems in corporate governance, especially if compared with the existing finance infrastructure that is riddled with agency problems (see credit rating, executive compensation etc). The hash cryptology provides another level of guarantee in an agency relationship executed through blockchain technology. The immutability of the blockchain and its cryptographic security systems provide transactional guarantees and create trust between principals and agents in the integrity of their contractual relationship. Self-validating blockchain transactions can help resolve the agency issues between most of the stakeholders and constituents of modern corporations. Smart agency contracts run on a custom built blockchain that enables principals and agents to store registries of debts or promises, create entire markets, among many other aspects that have not yet been considered. Hence, in the blockchain infrastructure, there is no need for the principal to institute oversight and monitoring with the associated agency costs. Because of the governance guarantees embedded in code, blockchain addresses the inherent agency problems in modern finance and corporate governance comprehensively. In addition to addressing the traditional agency problem in corporate governance between shareholder principals and manager agents, blockchain enabled smart contracting allows for the public and fully transparent, secure, and completely networked exchange between the corporation and customers, owners and investors, other stakeholders, staff, regulators, strategic partners, suppliers and service providers (Kaal, 2019). Blockchain technology makes the information transparent and auditable, and smart contracts allow for self- executing scripts that manage incentives and corroborates actions. This is akin to a Distributed Autonomous Organisation where decisions are agreed under distributed consensus mechanisms. As a result, Digitisation of contracts, compliance, audits, and other document heavy areas can be streamlined or automated with blockchain technolog (Bon, 2021).

Blockchain offers unprecedented solutions for agency problems in corporate governance. Supervisory tasks that were traditionally performed by principals to control their agents can now be delegated to decentralized computer networks that are highly reliable, secure, immutable, and independent of fallible human input and discretionary human goodwill. Blockchain technology provides an alternative governance mechanism that eliminates agency costs — the principal's cost of supervising agents — by creating trust in the contractual relationship between the principal and the agent. The removal of checks and balances in corporate governance, monitoring of agents, audit requirements, disclosure regimes, market pressure, executive agent compensation schemes, among many others, provides a qualitative shift in efficiency in the agency relationship and in corporate governance overall (Kaal, 2019)

Blockchain technology allows for decentralized networked governance that enables the removal of internal and external monitoring mechanisms previously necessitated by agency problems in corporate governance. Blockchain technology creates formal immutable guarantees in agency relationships that build the trust needed to overcome the agency problems in corporate governance. It facilitates a substantial increase in efficiency in the agency relationship and lowers agency costs in orders of magnitude (Kaal, 2019).

Stakeholder Theory (ST)

The basis of stakeholder theory is that companies have become so large and their influence on society is so profound that apart from shareholders, they must pay attention to and be accountable to many more segments of society that have mutual interests (Rahnamay Roodposhti and Salehi, 2009).

Stakeholder theory has the stakeholder construct as its core concept, which is defined as those "who can affect or are affected by the achievement of an organization's purpose" and its understanding is important to managers on how they could generate value for those third parties in the medium or long-run

(Freeman, 1984, p. 49). Hence, theories relationships between different social groups engaged in a common enterprise with a basis in social philosophy including values. Although developed as an alternative to shareholder logics for the corporate governance arena, it is not intrinsically bound to private sector profit-seeking rationales (Pouloudi & Whitley, 1997). The focus of the theory is to explain the importance of regarding for the interests and needs that are more than financial. According to this theory, a core issue associated with recognising a stakeholder is related to the values and ethics that a business has. It is believed that they have a moral obligation to account for the needs of different individuals and groups that extend beyond their fiduciary responsibility to shareholders (Sousa, 2012).

The blockchain-enabled accounting can avoid information asymmetry and include all stakeholders because blockchain offers new ways of organizing collaboration (Han et al., 2023). The blockchain technology can address the challenges faced by current accounting practice by offering a new way of recording, updating, validating, and sharing data that includes auditing boosted by using advanced AI tools (Han et al., 2023). In a blockchain-based accounting ecosystem, managers, accountants, business partners, and investors can actively collaborate to verify transactions, enabling organizations to serve more stakeholders. The distributed nature of blockchain technology can provide a valuable tool for promoting collaboration and interaction between different people across vast networks. Using AI technology, companies can promote an open and inclusive corporate culture to empower decision-making using blockchain data verified and shared by multiple parties (Vasarhelyi, 2012).

From the stakeholder theory perspective, blockchain technology can be an effective mechanism to promote an open and inclusive environment. Interested parties like accountants, business partners, and investors can join and collaborate in blockchain ecosystems to view, update or validate transactions based on their access rights. Organizations can promote stakeholder inclusion and expand business opportunities in blockchain networks. The event approach to accounting with real-time data recorded on blockchains can meet the unique interests and objectives of different accounting information users, who then can use AI to recognize patterns and predict trends. Real-time accounting enables different users who have access to blockchain network to view transaction data as it occurs. The triple entry accounting provides a unique shared ledger that can be viewed by permitted users as the single source of truth. Continuous auditing provides enhanced assurance to improve trust (Han et al., 2023).

Institutional Theory (InT) and Deinstitutionalization Theory (DInT)

Institutional theory explains why and how organizational structures and processes become established over time. This theory deals with the consequences of this institutionalization (Rahnamay Roodposhti and Salehi, 2009). Also, Institutional theory is often used to explain the adoption and spread of formal organizational structures, including written policies, standard practices, and new forms of organization. Tracing its roots to the writings of Max Weber on legitimacy and authority, the perspective originated in the 1950s and 1960s with the work of Talcott Parsons, Philip Selznick, and Alvin Gouldner on organization–environment relations. It subsequently underwent a “cognitive turn” in the 1970s, with an emphasis on taken-for-granted habits and assumptions, and became commonly known as “neo-institutionalism” in organizational studies (David; Tolbert and Boghossian, 2019). The main idea of the institutional point of view is that the actions of most organizations can be seen as a reflection of a pattern of doing things that has evolved over time and has legitimacy in the organization and its environment (Rahnamay Roodposhti and Salehi, 2009). The assumption of institutional theory is that there are different forces in forms of social structures, rules, norms and routines that lead to that organizations behave like each other (Deegan & Unerman, 2011).

Accounting is an institutional stream that operates in an environment influenced by institutional,

organizational, social and political laws and cultures. In this regard, Burns and Scapens (2000) believe that accounting practice is shaped by guiding institutions and organizations. On the other hand, Carruthers (1995) in the institutional dimension introduces accounting procedures as a means of legitimizing and legitimizing organizations through the characteristics that affect choices and decisions. Eriksson-Zetterberg et al., (2015) that if companies institutionalize practices that exist in the society, the companies will increase their legitimacy and survivability. For an accounting firm it may thus be a strategic idea to implement new technologies in their work processes. In addition, behaviors and actions made by organizations could further reflect behaviors and actions of the employees (e.g. accountants) at the organization. In turn, this could result in an attitude towards the actions the organization is taking.

Automation can be considered as one of the driving forces for both society- and organizational development and acting. Thereby, the fact that the accounting industry is being automated can thus explain the connection to the central assumption of institutional theory (Gustafsson and Jerkinger, 2021). Also, institutional theory is used in information systems research in order to understand how institutions influence, pressure and influence the design, implementation, application and results of technologies in organizations (Orlikowski & Barley, 2001). According to Tsai et al. (2013), the acceptance or non-acceptance of information systems can be considered to evoke institutional theory in terms of motivation and legitimacy. These topics are dimensions of pressures and interventions that Dimaggio and Powell (1983) refer to as coercive, imitative and normative pressures, which they call isomorphism.

In the analysis of accounting literature, Granlund and Lukka (1998) enumerate the factors of this theory and this assimilation as follows: economic pressures, such as increasing competition of accounting and organization in global markets, advanced information technology systems, global market dynamics and advanced production technologies; Mandatory pressures such as transnational laws and trade agreements, harmonization of financial accounting laws and the influence of transnational corporations and headquarters on subsidiaries; Imitative pressures such as imitating the procedures, methods and consultants of leading companies; and normative pressures such as the professionalization of accountants, research and academic training in this field. Using similar arguments, Schilder (1998) stated that companies participating in the global economy are increasingly converging, especially in terms and techniques of electronic accounting.

From a Blockchain perspective, institutional theory could be used to examine how logistics and supply chain managers seek to manage space, resources and legitimacy to overcome institutional pressures, in particular how innovative approaches (such as Blockchain) from competitors lead to mimetic processes (Kummer et al., 2020). Following theoretical analysis, it can be seen that the implementation of Blockchain technology will be impacted by two main drivers. As currently we are observing firms in the vanguard of understanding and creating Blockchain systems, we believe that large-scale dissemination of the technology will happen from a user perspective.

The first driver is related to the legitimacy that grounds the technology (Dowling and Pfeffer, 1975). Being a decentralized modus operandi, legitimacy is conferred upon, or credited to, the organization or institutions by its constituents (Perrow, 1970). Legitimacy can be seen as an umbrella evaluation that it is based on a cadence of historical events, where such actions ‘are desirable, proper or appropriate within some socially constructed system’(Suchman, 1995: 574). Hence, it can be understood that after preliminary user friendly Blockchain applications, its dissemination will become a societal requirement. Torres de Oliveira (2017) argues that Blockchain s can be considered as semi-formal institutions that are dependent on public legitimacy.

The second driver refers to the decrease in transaction costs that in competitive markets are normally transferred to the final users. For example,

individuals not being required to fill out an annual tax return can exemplify how individuals will push for Blockchain dissemination (Torres de Oliveira, 2017). Blockchain can dramatically decrease transaction costs between different agents, lower institutionalised countries may see Blockchain s as an easy and controllable way to become more institutionalized without the pitfalls of a traditional institutional transformation. At the same time, private firms in developing countries can utilize Blockchain as an alternative to informal institutions and the formal market as, by doing so, they decrease uncertainty, give confidence to agents involved in the transaction, and reduce their service costs (Torres de Oliveira, 2017). Moreover, institutional theory can be used to examine why companies adopt logistics innovations and Blockchain technologies. Using the isomorphic pressures, scholars might be able to distinguish between the different pressures, and determine specific attributes related to their adoption and implementation. Institutional theory can help to classify if Blockchain adoption or strategy is more internally or externally driven, as well as to identify the logics behind the adoption (Kummer et al., 2020).

Blockchain has several components that can help solve existing accounting and auditing problems, understanding institutional forces may help identify changes in the accounting and auditing profession and disruptions in existing accounting and auditing practices. As Blockchain is an organizational technology with the potential to transform the accounting and auditing profession, institutional theory can be effectively applied to understand changes in norms and practices resulting from Blockchain. Also, the use of Blockchain in the accounting and auditing profession can lead to institutionalization and the elimination of communication intermediaries in the accounting and auditing work process, which is explained by the theory of deinstitutionalization. Studying deinstitutionalization means understanding opposing forces or discourses emerging outside and inside the organization (Hauser, 1998). Oliver (1991) defined deinstitutionalization as a process by which legitimacy is taken for granted and rules and established practices are challenged and eventually disappear. Deinstitutionalization also refers to the process where old, institutionalized practices are abandoned because practices have lost their original meaning. Therefore, Automating accounting and auditing with the help of the potential of the Blockchain platform can lead to deinstitutionalization.

Path Dependency Theory (PDT)

Path dependency theory (PDT), contains the philosophy that past events influence future events (Bergek & Onufrey, 2013). This theory takes into account the history of practices (Schreyögg and Sydow, 2011) and builds on this insight to show how past events and practices (can) influence future action and decision-making (Rowlinson et al., 2014). The definition of path dependency suggests “that what has happened at an earlier point in time will affect the possible outcome of a sequence of events occurring at a later point in time” (MaHoney, 2000: p. 510). Also, decisions made in the past can impact the present and define alternatives for the future (MaHoney, 2000). Path dependency theory starts from the premise that organizations and actors are part of institutions that structure and channel their behavioral standards and activities along established paths. These paths are made up of institutions (with their values, standards and rules) and public policies determined by previous choices that impose constraints on institutional development processes (Pierson, 1993). Most researchers agree that path dependency is characterized by the following three phases: (1) path emergence, (2) self-reinforcing mechanisms, and (3) lock-in (Wenzig; Nuzum and Schaltegger, 2022).

Path dependency leads to several consequences that may have a negative influence on the future development or the growth of an organization. Literature names unpredictability, inflexibility, and potential inefficiency as examples (Wolf, 2013). Path dependency might lead to inefficiency if the chosen equilibrium does not lead to a positive output under the given circumstances. If path dependency lead to a situation of total inflexibility and a change of paths is

not possible any more, then literature describes this situation as "lock-in" (Ruttan, 1997).

In the field of accounting and auditing, path dependence can be understood by looking at the historical record and the changing trends of principles, standards and methods. Traditional, negative attitudes, biases and unwillingness to adapt to new technologies are still visible in these professions. Still, some people mistakenly consider accounting to be the same as bookkeeping and auditing as handcuffing and interrogation. Fortunately, the spread of the two-way accounting method was able to greatly affect the ability of the accounting and auditing profession to grow. But still dependence on this path, method and its principles casts a shadow over this profession. According to the path dependence theory, the importance of this important event in the past is still effective on present procedures and future actions; As despite the blocking of this path, it is a foundation and a pillar for three-way accounting and automatic accounting that without considering the past of this field and profession, one cannot think of designing or implementing these methods. According to this theory, sometimes some accounting methods, especially auditing, despite the inefficiency and failure in the market and the mentality of the society, are still used and cause lock-ups and critical conditions, which can also be referred to as financial scandals.

In the context of Blockchain implementation, path dependency theory would argue not only that organizations may stick with a certain "path" or a certain Blockchain standard due to institutional norms and arrangements, but that the "lock-in" effect makes it very difficult to change the standard once it has taken hold, even if alternatives may be more efficient. For a Blockchain standard, where "a dominant design has not yet stabilized" (Geels, 2004: 37), deciding on a certain standard is associated with risks and uncertainty, as the chosen path may not align with the future dominant design, thus risking higher transaction costs (Herold et al, 2022). So a decision regarding the timing of the Blockchain implementation for a potential transaction cost advantage can be linked to the lock-in effect (Bahli and Rivard, 2003). However, Path dependency theory would argue that implementing a certain Blockchain standard, whether dominant or alternative, can be self-reinforcing, which leads to a positive-feedback loop: the more people that adopt the Blockchain standard, the more attractive it is for further adoption. Although this might be good if a dominant design has been chosen, the "lock-in" effect may also lead to negative externalities, inertia, e.g. if a particular technology is adopted, that choice decreases the value of another competing technology and its chance of adoption (David, 1985).

Theory of Professions (TP)

Abbott (1988), who is known as an outstanding researcher in the theory of professions, considers the claim of being a profession and its competence to consist of three dimensions (legal framework, public opinion, and workplace). He also defines the social structure of a profession including groups, controls and workplaces that work as an organization to create and improve a professional model. To Abbott, an occupation is a profession if (and only if) it can abstract its knowledge, not only to solve novel problems, but also to adapt its practices to new niches. Canning and Dwyer (2001) present the Theory of Profession framework with five attributes that contribute to 'professionalism', and ultimately, the protection of public interest. These attributes are: test of competence; further study and relevant training; a register of qualified members; enforcement of a high standard of professional conduct; and Organization within a specific occupation. To understand what a profession is, Brante's (2009) theory of professions is used. Theory of professions is a theory that defines the concept of professional role from eight categories. 1) Education; 2) Abstraction; 3) Uncertainty; 4) Autonomy; 5) Trust; 6) Organizational structure; 7) Interchangeability; and 8) Knowledge Conveyance.

Professions are expected to commit their services to the interest of the public rather than the interests of their clients or self-interest (Pollock & Amernic, 1981). Theory of Profession provides a useful framework for identifying the functions and attributes of the profession (Canning & O'Dwyer, 2001).

Therefore, accounting professionals are regarded as a mechanism to protect public interest as they are required to be act above and beyond material incentives (Larson, 1977).

The Theory of Profession provides an analytical lens with which to understand the characteristics, attributes and structure of accounting profession. The framework includes characteristics that previous research has identified explains how membership to a profession is achieved by stakeholders (Pollock & Amernic, 1981). In an accounting context, The Theory of Profession is described as the power and reputation granted by society to the profession in terms of protecting public interest where professionals acquire a body of knowledge, which is connected to the major needs and values of the social and accounting system (Pollock & Amernic, 1981). Fournier (1999), in describing the profession of accounting, presents a model of professionalism as a disciplinary logic that includes criteria of legitimacy, public good, social welfare, as well as professional competence based on knowledge, conduct and control. He adds that to be a professional requires appropriate conduct as well as the ability to gain and retain a body of knowledge on a subject.

By using this theory to investigate the professional role makes it possible to also examine the accountants practice. The professional role refers to the expected function an accountant has at a particular company based on the education and knowledge necessary to perform their specific tasks (Greenman, 2017). As the practice refers to the working tasks performed in the role of an accountant, studying the professional role is necessary and a way to examine the practice. This theory makes it possible to characterize how the profession (e.g. professional role and practice) changes due to automated processes in accordance with the eight perspectives. This theory could also make it possible to examine the attitude towards it. In the sense that it could be possible to analyses if the attitude towards automation can be explained by changes in the different parts of the accounting profession. Since professions are associated with a certain social status, it might be a connection between changes in the profession and attitudes towards what creates the changes (Gustafsson and Jerkinger, 2021). Therefore, the purpose of using this theory is to be able to deconstruct the definition of a profession and analyze what part of the accounting profession that can be automated. Thereof, we may be able to analyze what parts of the accounting firm's employees that can be substituted or not and whether the profession is at stake as debated in media. Furthermore, as argued above, a certain education is needed to constitute a profession. Such educational aspects, as well as salary level, are important because the introduction of technology in organizations may have different effects depending on such factors. The phenomena when technology affects the employees with a certain educational and salary level is called job polarization (Törnqvist and Forss, 2018).

Job Polarization Theory (JPT)

Job polarization implies that we should expect an increasing employment share for occupations in the higher and lower parts of the wage distribution and that the employment share should decrease in the middle of the wage distribution (Heyman, 2016).

According to this theory, an important issue in the literature that analyzes how computerization and new technology affect relative labor demand is identifying the types of workers for whom computers and new technology are a substitute and those for whom they are a complement. This in turn depends on the characteristics of individual job tasks – for instance, the routineness of job tasks. The substitution effect refers to the substitution of labor for increasingly cheap computer power. This effect is dominant in routine tasks, and thus the demand for this type of labor can be expected to be affected negatively. It is in general difficult to simulate tasks that involve creativity, flexibility and good judgement. Therefore, these types of non-routine tasks will instead be complemented by increased computer usage, and the demand for this type of labor may then increase (Heyman, 2016).

The digitization and automation of professions has led to a phenomenon called job polarization (Shim &

Yang, 2018: 144). Job polarization arise when the automation of routine tasks increases, which leads to an increased demand in cognitive professions and increased employment in low education professions due to the middle category is pushed out from the market. Hence, the middle educated and waged professions are the most affected by automation and that is where the accountants are positioned (Goos & Manning, 2007: 118).

When the number of tasks, which is completed by the automatic technologies, increases, the process of job polarization appears. It carries out the increased need in cognitive careers and the increase in recruiting for the jobs, where the low level of education is required. It happens because the middle type of professions is being forced out of the market. The middle type of professions with average pay, where the middle education level is required, is affected the most by the automation of technologies, and this is where the profession of accountants is based (Goos & Manning, 2007: 118).

Information Theory (InfoT) and Information Processing Theory (InfoPT)

Information theory studies the transmission, processing, extraction and utilization of information, thus information with information theory can be thought of as the resolution of uncertainty (Tushman and Nadler, 1978). The basic rationale behind information theory is that the more knowledge about a topic is available, the less new information can be collected. In other words, if an event is expected, only little information can be gained. On the other hand, if an event is unlikely to happen, relatively new information can be collected when the event happens (Galbraith, 1974).

Information theory provides a foundation for the analysis of how Blockchain can increase information-processing capabilities, as well as increase transparency along the supply chain (Kummer et al, 2020). Information theory in logistics and supply chain, in the context of Blockchain applications, often deals with information technology acceptance or information processing (theory) within information systems. Information processing theory, in alignment with information theory (Galbraith, 1974) Information processing theory considers organizations as systems that need to process information to reduce uncertainty (Saberi et al., 2019). Therefore, Information processing theory can help identify the organization's existing or required information processing capabilities for Blockchain data analysis (Bell DeTienne & Jackson, 2001). With the application of Blockchain, organizations can adopt information processing theory to evaluate the competitiveness of different Blockchain networks (Saberi et al., 2019), to identify information processing requirements from Blockchain adoption (Martinez et al., 2019), and to analyze how Blockchain transparency can improve existing information processing capabilities (Kummer et al., 2020).

On the other hand, Accounting is considered an information science used to collect, classify, and manipulate financial data for organizations and individuals (Demski, 2007); And since the symmetric uncertainty contains the proportion of information shared between the main accounts and all the economic events, it can be used itself as a global index associated to the company (Ribeiro and Prataviera, 2014), To apply the information theory, the accountant has to have reliable and relevant data indicating the whole ensembles of events in a certain situation (Ribeiro and Prataviera, 2014).

Network Theory (NT) and Actor-Network Theory (ANT)

Network theory or more precisely social network theory, investigates the inter-organizational linkages and relationships and their impact on the network management (Mitchell, 1969). In other words, Network theory examines the interplay and the management of inter organizational relationships. Similarly, to transaction costs analysis, network theory examines links between organizations, but concentrates rather on relationships than on transactions (Rinehart et al, 2004). Next to the network theory which focuses on relationships and links, there

is the actor-network theory (ANT); which pays attention to the constituent components of the network and their connections.

Actor-network theory is concerned with the interaction between the social and the technical, and the creation and maintenance of stable coextensive networks of humans and non-humans. In the case of digital technologies, this includes people, organisations, software, computers and communications hardware and infrastructure standards (Gilding and Department, 1999). Actor-network theory symmetrically treats the social and the technical as inseparable, arguing that humans and artefacts should be analysed with the same conceptual apparatus (Latour, 2017). Also, Actor-network theory is often described as a systematic approach exploring the infrastructure that supports the 'scientific and technological achievements' within a network, making it a more profound approach to researching and understanding service networks (Carroll, 2014). Fioravanti & Velho (2019) and Thapa & Omland (2018) also believe the most important Actor-network theory characteristic is providing an analytical lens to understand the socio-technical components of hybrid contexts.

From a Blockchain perspective, network theory can help to analyze the interplay within firms' interorganizational networks. Assessing the role between relationships and information transparency may help managers to understand if personal relationships can be replaced with the increased information exchange offered by Blockchain technology. Additionally, network theory can also help to assess how business relationships change with the use 'trustless systems', which may not only automate contract compliance, but also replace personal relationships (Tian, 2016). Li and Zhou (2020) and Sternberg et al. (2021) argued that Blockchain applications in the supply chain are subject to network effects as the benefits of the technology comes from having an increasing number of parties adopting the technology. On the other hand, McCallig, Robb and Rohde (2019) developed a design for a Blockchain - based accounting information system using network analysis.

Access to up-to-date and accurate information will link user actors (accountants) to the network. When the actors of production, promotion and users of accounting information (accountants, auditors, users inside and outside the organization), precisely align with the missions and mission of the network that is aligned with the goals of the institution, and take steps to support it, the network It will achieve more stability (Banitalebi Dehkordi et al., 2014). The Actor-Network Theory applied to accounting and related fields has been studied more in foreign literature, investigating aspects of information systems (Bloomfield & Best, 1992), economic markets (Callon, 1998) and organizational studies (Pollack, Costello & Sankaran, 2013), which investigated as to information technology (Martins, 2011), process management (Albuquerque, 2012), governance and strategic outcomes (Montenegro & Bulgacov, 2014).

According to this theory, institutions, accountants, auditors, Blockchain and new technologies are network actors. A network that emerges on the Blockchain platform with the help of new technologies. This theory examines the actors and their relationship in the network, analyzing and identifying the role of actors in the development of the network, how actors influence effective implementation and performance improvement, changes in accounting and auditing procedures, and the departure point of the actors. According to the research findings of Banitalebi Dehkordi et al. (2014), it was determined that based on the actor network theory, the accounting information system consists of three components: actors, layers, and tools, and the connections in this system can be described and investigated based on these components. Also, according to this theory, the accounting information system has executive, organizing and planning layers as well as policy-making, in which standards, principles and professional rules and rules and regulations required by the accounting information system are developed. According to the theory of activist networks, the accounting information system also has tools in which

the integrity of laws and regulations, financial resources and technical resources are evaluated and measured according to the conditions and needs of the profession and society, and after identifying the strengths and weaknesses and needs of the system It leads to the correction and improvement of the accounting information system. Also, regarding the network of activists focusing on accounting and management system, Mohammadi et al.'s research (2023) shows that the actors of the network, with the aim of achieving sustainable development in the shadow of professional, social, economic, environmental, organizational, etc. accountability in front of the society, shareholders and the future generation, will eliminate the usual and repetitive work, knowledge Decentralize accounting and develop the role of management accountants and produce information that is forward-looking and give meaning to the information system through internal efficiency, greater focus on innovation, learning, flexibility, organization, storage, retrieval, exchange and use of information systems. Cause the competitive advantage of companies.

Transaction Cost Analysis Theory (TCA) / Transaction Costs Theory

The core concept of transaction cost theory aims to enhance economic efficiency within the process of product or service exchange through the market. Because, In addition to the production costs of goods, transaction costs play a crucial role in finding an efficient economic entity and its decision boundary. Other than the above-mentioned categories of transaction costs, Williamson proposed three determinants of transaction costs—frequency, asset specificity and uncertainty as key dimensions that capture the characteristics of economic exchange between institutions (Williamson, 1975). Mahoney (2004) classifies developed transaction costs into three types. First, search and information costs are incurred to reduce uncertainty before a transaction is executed. Second, bargaining costs are incurred during negotiations before reaching a common agreement. Third, policy and enforcement costs are incurred during the supervision of a contract.

Transaction costs analysis can help to determine the effect of transaction costs changes through Blockchain technology, which subsequently affects organizational structures and practices. Thus, transaction costs economics can be used to explain how certain elements of Blockchain technology change the design of contract agreements, and how automated smart contracts may reduce transaction costs significantly (Kummer et al., 2020). Indeed, Blockchain technology can provide value across multiple dimensions, by decreasing information asymmetries and reducing related transactional costs (Block et al, 2018). Review of Roeck, Sternberg and Hofmann (2020), like the research of Morgan, Ritchey and Ellinger (2018) and Subramani (2004), features of Blockchain , especially distributed ledger, partnerships, transparency in the supply chain and its information system in addition to helping the supply chain and Performance evaluation supports decision makers, reduces transaction costs, increases asset specificity in transactions, and reduces information asymmetry. Ultimately, this leads to lower costs.

In accounting, the excess of resources over expenses, or in other words, cost-effectiveness, is defined as one of the covenants and limitations in the theoretical framework of standards. On the other hand, the purpose of measurement and accounting and auditing is to provide information that can be used to manage costs, reduce expenses, reduce risk, make decisions and choose the best option to obtain maximum benefits and resources with minimum cost. Therefore, accounting and auditing rules, standards and procedures are always reviewed so that with the help of scientific and technological advances, they can collect the most desirable and useful information and report to the stakeholders. However, the use of new technologies (such as Blockchain) to fulfill this mission in the era of communication, technology and innovation is an undeniable issue due to their features and capabilities.

Innovation Diffusion Theory (IDT) and Perceived Characteristics of Innovating Theory (PCIT)

The Innovation Diffusion Theory argues that "potential users make decisions to adopt or reject an innovation based on beliefs that they form about the innovation" (Karahanna, Straub & Chervany, 1999). The Diffusion of innovation theory posits that communication has a strong effect on social change within a community (Rogers, 1962). Accordingly, the innovation diffusion theory model proposed by Rogers is one of the models used to analyze the communication process of any innovation through the members of a system.

Diffusion of Innovations Theory investigates a wide range of innovations by introducing four aspects (time, communication channels, innovation, and social system) that influence the dissemination of a new idea (Prashant dongre, 2022). The diffusion of innovation theory (DOI) are the key theories that are widely used to predict consumers' adoption and behavior (Rogers, 1962). The five steps of the innovation decision step, namely confirmation, knowledge, implementation, decision, and persuasion, took place over time through a succession of communication channels among members of a comparable social system (Prashant dongre, 2022). Also, innovation diffusion theory identifies five characteristics for innovation diffusion: observability, testability, complexity, adaptability and comparative advantage (Lou & Li, 2017).

Image, voluntariness, and behavior are three attributes added to the (IDT) in Perceived Characteristics of Innovation Diffusion Theory (PCIT) Image, voluntariness, and behavior are three additional features identified in this model that are added to the IDT theory. The perception of voluntariness influences conduct, which influences actual behavior when compared to voluntariness (Prashant dongre, 2022).

A novel idea may get into the arena with zeal and may enjoy fast reorganization, but it still may find a delay in adoptions. In the context of diffusion of innovation, the adoption does not always result in widespread of technology by the firm. The same is possible with Blockchain technology also. Assimilation gap is lag between widespread usage and adoption (Fichman & Kemerer, 1997). The innovators are the first ones to try the innovation, and these are the leaders who adopt a proven innovation, and their adoption affects the social behavior of others. The early majority category follows the early adopters, and they are the ones who need to confirm the demonstration of effectiveness. The late majority category is usually sceptical of change, and they tend to adopt the innovation by compulsion forced by the environment. Laggards are the hardest to convince, and they adopt the innovation when intense pressure from circumstances appears. If the analogy with the diffusion of innovation is followed, the percolation of Blockchain by firms is supported by innovation, productivity and competitive edge possibility. Communication in the context of Blockchain will be the awareness of its benefits and potential. The structure of the social system is the nature of the firms involved in it. The financial technology industries will be fast to adopt it. The innovator category decision-makers may be from the banking industry. The early adopter may be from the supply chain industry, and the early majority may be from the governance and EdTech companies, and late majority and laggards may include members from the manufacturing and commodity sector (Dua, 2023).

Contingency Theory (CT)

Organization theory and design tend to fall somewhere in the intersection of the three (figure 1). Contingency theory is a part of organizational theory and falls within this intersection (Rabey, 1989: 168). Liang and Lu (2013) believe Contingency theory originates in organizational theory and emphasizes developing the most appropriate management approach to respond appropriately to different situations. Therefore, Contingency theory is considered a dominant, theoretical, rational, open system model at the structural level of analysis in organization theory (Scott, 1992). According to this theory: (i), there is no best organizational structure or managerial method that fit all firms, and (ii) the effectiveness of any

managerial methods or organizational structures depends on internal and external business environments and processes (Galbraith, 1974). The basic assertion of contingency theory is that the environment in which an organization operates determines the best way for it to organize (Scott, 1992). In simple words, environmental conditions and factors determine the appropriate choice and decision and suitability for those conditions. It means making decisions and doing the right thing according to the conditions.

Contingency theory can help investigate how organizations react to their external environment. According to this theory, the fit between benefits deriving from technology and the organization's business environment is one of the critical factors managers should consider in adopting technology (Araral, 2020).

Since the new work environments, by integrating in technology, provide a huge amount of data at high levels; these conditions require more speed, accuracy and reliability. Blockchain, having various advantages such as transparency, agility, trust, authenticity, security, cost reduction and efficiency, can be suitable and favorable for these conditions. On the other hand, in the increasing environment based on information technology and the use of new technologies, traditionalism and bureaucracy are no longer desirable. Therefore, blockchain with deep analytical insights will change the working conditions of accounting and auditing, and these new conditions require employees with new knowledge and skills who are eager to learn continuously and consider changes as a constant in their professional lives.

Game Theory (GT)

Game theory provides a set of mathematical tools for analyzing the interaction among rational decision-makers (Liu et al., 2019). Therefore, From a systematic point of view, the mentioned theory is based on mathematics and logic and looks at the decision-making problem in such a way that the efficiency, efficiency and results of the behavior of an individual or an institution are not only dependent on one's choice and decision, but like a game, it also depends on the choice and decision of others (Rahnemay Roodposhti and Salehi, 2009). In game theory, players can adopt several strategies, have a certain influence on other players, and get a certain payoff in the interaction (Zhang and Wu, 2021). However, in a game, each decision-maker as a player chooses its strategy to maximize its utility, given the other players' strategies (Liu et al., 2019). Game theory is the study of rational choice of strategies between individuals to pursue the maximization of their interests. The core concept is Nash equilibrium (Zhang and Wu, 2021). This theory requires the adjustment of the decision-making strategy, and its foundations are the minimization of losses and the maximization of gains (Rahnemay Roodposhti and Salehi, 2009).

It is basically the mathematical model that studies the strategic interactions between players to make reasonable decisions, if imposed on the Blockchain platform, game theory has analyzed the strategy of the consensus nodes. Through the interactions between them such as understanding and predicting mutually exploiting behaviors, then having optimal response strategy based on balance. Through the game theoretical analysis, the nodes can learn and predict mining behaviors1 of each other, then having optimal reaction strategies based on equilibrium analysis. Furthermore, game theory can be used to develop incentive mechanisms that prevent nodes from misconduct or initiate attacks. As such, referring to game theory is voluntary decision-making with all consensus of the nodes in the Blockchain network (Liu et al., 2019). Also, the design of the mining mechanism relies on both cryptography and game theory (Han et al, 2012).

Theory of Reasoned Action (TRA) or Reasoned Action Theory (RAT)

Fraj & Martinez (2003) believe that the theory of reasoned action is based on two assumptions. First, the existence of rationality and systematic use of available information; Second, it assumes that people consider

the consequences of their actions before deciding whether to commit to a particular course of behavior.
This theory acknowledges that there are factors that can limit the influence of attitude on behavior (Amalathas et al., 2022). Any human behavior is predicted and explained in this model by three primary cognitive components: attitudes (a person's favorable or unfavorable feelings toward an activity), social norms (social influence), and intentions (a person's decision to do or not perform a behavior) (Prashant dongre, 2022). Therefore, as per the Theory of Reasoned Action, an individual's attitude towards behavior is driven by behavioral intention, and behavioral intention is jointly controlled by attitude towards behavior and subjective norms (Fishbein, 1979). In addition, three boundary factors are identified to test and assess the TRA: volitional control, intention stability across time, and measurement of intention in terms of target, time, context, action, and specificity. Furthermore, several approaches are established to strengthen the robustness between corresponding purpose and attitude, such as generality, target, action, context, and time horizon. The key disadvantages of TRA, on the other hand, are the failure to address the role of habit, cognitive deliberation, misunderstanding through a survey (attitudes, subjective norms, and respondents' intentions), and moral issues. Furthermore, usage voluntariness is a critical issue for TRA validation (Prashant dongre, 2022). TRA is perceived as a founding theory for the development of the TRAM model and of individual behavior regarding TA and use (Davis, 1989).

For Blockchain , the attitude of a firm will be driven by its evaluation of the belief that Blockchain can provide solutions, and subjective norms will include the influence of productivity that is achieved by other industries and competitors, although weighted by the evaluation of decision-makers of the firm. Behavioral intention will be an action of top management to discuss Blockchain in the strategic meetings and making team for research and development. This theory provides the basis for different theories that have been mentioned (Dua, 2022). This theory also takes into account the implementation of accounting and auditing in the platform of Blockchain, taking into account the components of intention, attitude and norms arising from effectiveness, efficiency, economy and its two-way consequences on the profession and society.

Theory of Planned Behavior (TPB) and Decomposed Theory of Planned Behavior (DTPB)

In the Theory of Planned Behavior, perceived behavioral control (PBC) is added as a new variable in the theory of reasoned action. Perceived behavioral control is primarily determined by the availability of resources, opportunities, and skills, as well as the perceived importance of those resources, opportunities, and skills in achieving outcomes (Prashant dongre, 2022). This construct was added by Fishbein and Ajzen (1975).

This construct refers to perceived ease or difficulty in executing the behavior of interest and is affected by self-efficacy. The perceived behavior control is taken from the self-efficacy theory given by Bandura (1986) and is defined as 'the judgment of how well one can execute the courses of action required to deal with prospective situations' (Dua, 2022). Hence, "People's impression of the ease or difficulty of doing the behavior of interest" is referred to as "perceived behavioral control." Self-efficacy, according to the idea, is the most essential determinant of behavioral change since it leads to the development of coping behavior (Prashant dongre, 2022).

The factor that distinguishes the TPB is the PBC variable (Soliman, 2021: 524-549). However, there are two major issues with the TPB model. First, if a computer system is inaccessible, one's attitudes toward information technology will be largely irrelevant. Second, the revised TPB may be viewed as a more appropriate theoretical framework that is influenced by the degree of individual voluntariness in deciding whether to use information technology in the workplace (Prashant dongre, 2022). Therefore, the

Theory of Planned Behavior Analysis (DTPB) was presented.

The Decomposed Theory of Planned Behavior (DTPB), proposed by Taylor & Todd (1995), consists in a decomposition of Theory of Planned Behavior (Ajzen, 1991). This theory was proposed in order to help better understand the relationships between belief structures and antecedents of intention (Taylor & Todd, 1995). The decomposition made to Theory of Planned Behavior (Ajzen, 1991) focused on the Attitude, Subjective Norm and Perceived Behavioral Control constructs. According to Taylor & Todd (1995), the decomposition of beliefs has advantages, such as clarifying and better understanding existing relationships, providing a set of beliefs that can be used in different contexts, and by focusing on specific beliefs, the model it becomes administratively relevant, pointing to specific factors that may influence adoption and use. These factors can be worked through systems design and implementation strategies (Taylor & Todd, 1995).

The PBC in the context of Blockchain will be the firm's capability to achieve the desired objective by action or decision made for Blockchain. It will be affected by the firm's harmony with technology (Dua, 2022). Also, the PBC regarding automated accounting and auditing, the possibility of implementation, the ability and control of Blockchain in this field and its ease or difficulty.

Theory of Interpersonal Behavior (TIB)

Theory of Interpersonal Behavior (TIB) presents justifications regarding emotions along with cognitive and social aspects to predict the behaviors of consumers (Donovan, 2011). In addition, it is also stated that the likelihood of executing a behavior not only is subjected to the person's habits, but also to situations that facilitate the behavior and intentions (Sung; Cooper & Kettley, 2019). The theory of interpersonal behaviour was first proposed by Carl Rogers in the 1950s, and it has since been developed and expanded upon by other researchers. The theory is based on the idea that individuals have innate needs for positive self-regard, and that these needs drive their behavior in social interactions.

TRA varies from TIB in that TRA seeks to account for the greatest amount of variance with the fewest variables, whereas TIB seeks to account for the greatest amount of variance overall, because even a tiny amount of variance can be socially significant if the behavior in issue is vital. Emotions, social variables, and habits are highlighted as the major components in forming the intention in this paradigm. To argue the conduct, TIB has three layers. Personal beliefs, attitudes, and social circumstances that influence conduct are influenced at the first level by personal attributes and previous experiences. The second level illustrates how affect, cognition, and social influences, as well as personal normative views, influence behavior intentions. At the third level, behavioral intentions, situational factors, and prior experience are used to forecast the likelihood of doing a specific activity. In comparison to TRA and TPB, the fundamental disadvantage of TIB is its complexity and lack of parsimony. The second level illustrates how affect, cognition, and social influences, as well as personal normative views, influence behavior intentions. At the third level, behavioral intentions, situational factors, and prior experience are used to forecast the likelihood of doing a specific activity. In comparison to TRA and TPB, the fundamental disadvantage of TIB is its complexity and lack of parsimony. Furthermore, TIB does not provide a straightforward technique for the operational definition of variables among models, and the researcher is left to do so (Prashant dongre, 2022).

The Integrated Behavioral Model (IBM)

Integrated Behavioral Model (IBM) is designed to provide an understanding of human behavior. According to Integrated Behavioral Model (IBM), determinants of individuals' behavioral intention are their experiential and instrumental attitudes towards the behavior, their descriptive and injunctive norms, and their perceptions about the difficulty or ease of conducting the desired behavior and perceived self-efficacy (Glanz & Viswanath, 2008). In general, these

factors can be divided into four categories: Experiential Attitude, Descriptive Norm, Personal Agency, and Self-efficacy (Glanz et al., 2008).
For Experiential Attitude, which is a construct found only in the IBM's framework, there are two scale-types that their use is dependent on: the proper form of measure, direct or indirect. An indirect measure for Experiential Attitude refers to the correlation between behavioral performance beliefs and specific positive or negative feelings (Glanz et al., 2008).

The next construct for the Integrated Behavior Model is Perceived Norm, which includes social pressure some individual feels to perform or not perform a certain behavior (Fishbein, 2007). A Direct measure for Descriptive Norm identifies an individual's perspective on whether or not most people perform a particular behavior; whereas, an indirect measure focuses on the subject's belief that they perform the behavior or not.

The final construct presented in IBM is Personal Agency. Personal Agency consists of Perceived Control, described previously in TPB, and Self-Efficacy. Self-Efficacy is explained in this model as the individual's level of confidence in their ability to perform a particular behavior despite obstacles or challenges that stand in their way. The direct measure associated with Self-Efficacy looks to identify an individual's overall ability to perform the behavior. The indirect measure looks at how an individual perceives their ability to overcome facilitative or constraining conditions when attempting to perform a behavior (Amalathas et al., 2022).

Affect, Behavior and Cognition Model (ABC)

The ABC model of attitude was first developed by Albert Ellis as a way to understand pessimistic thinking and move past it. This model is also known as the tripartite model (Van Harreveld et al, 2015). An attitude is defined as "a relatively enduring organization of beliefs, feelings, and behavioral tendencies towards socially significant objects, groups, events or symbols" (Hogg & Vaughan, 2005, p. 150). Since the attitude consists of beliefs, feelings and behavioural tendencies (Hogg & Vaughan, 2005), the ABC model includes the three elements; affection, behaviour and cognition (Breckler, 1984) that ABC is made up of three components, affective, belief, and cognitive (Van Harreveld et al, 2015).

In this context, Blockchain knowledge can create a different attitude towards this technology. Also, understanding the results of the automated of accounting and auditing in the platform of Blockchain technology will change the attitude towards it. This issue can be explained in the form of the structural components of the ABC model as follows: The technological skill of the accountant and auditor can be considered as an affect component. When the technology is generally easy or difficult to understand and use, automated accounting can also be perceived as easy or perceived as a problem. The behavioral component can be the previous negative or positive experience of accounting and auditing in the processes of digitalization, automation and automated of some procedures, and of course the attitude towards automated of accounting and auditing in the platform of Blockchain technology. The cognitive component can be exemplified by accounting and auditing beliefs and knowledge about automated accounting and auditing processes and Blockchain technology, which come from their previous experiences or with rumors from the industry, social environment, society and media, which can influence the accountant's attitude and Auditor to influence.

Although the main objective of this model is to capture the underlying factors that drive attitudes it ignores the historical perspective which may also affect the attitude of an individual. Therefore, there was a need to include PDT in the study's framework.

Motivational Model (MM) and Igbaria's Model (IM)

The Motivational Model (MM) was presented by Davis, Bagozzi, & Warshaw (1992) in the context of the use of technology. The MM theorizes that extrinsic and intrinsic motivation are the main drivers of an

individual's intention to perform a given behavior, and the intention to perform a behavior is a construct that is closely linked to the actual behavior (Venkatesh & Speier, 1999).

The Motivation Model's primary concept is that users' behavior is shaped by both extrinsic and intrinsic motives. Extrinsic motivation is described as the belief that people desire to do something "because it is considered to help them achieve desirable goals that are not related to the activity itself, such as better job performance, compensation, or promotions" (Davis, Bagozzi, & Warshaw, 1992: 1112). Perceived utility, perceived simplicity of use and subjective norm are examples of extrinsic motivation. Intrinsic motivation, on the other hand, is defined as behavior that results in a feeling of joy and satisfaction for the individual, (Vallerand et al. 1997). For Blockchain, the external motivation for Blockchain technology will be peer pressure, regulations, need of the industry and requirements from customers. The intrinsic motivation for any firm would be innovation, competitive edge and value creation (Dua, 2023). Therefore, any of the advantages of using blockchain in automating accounting and auditing, such as transparency, reliability, completeness, relevance, usefulness, etc., can be an incentive to implement this important.

Social Cognitive Theory (SCT)

This theory was proposed by Bandura (1986), where initially it was designated Social Learning Theory. The SCT states that human functioning is the product of a reciprocal interaction of intrapersonal, behavioral and environmental determinants (Bandura, 1986: 2012). Subsequently, Compeau and Higgins (1995b) applied and extended SCT to the context of computer use. However, the nature of the model and the underlying theory allow it to be extended to the acceptance and use of information technology in general (Venkatesh et al., 2003).

SCT was developed using three key factors: behavior, personality, and environment, all of which interact bi-directionally to predict group and individual behavior. It can also identify techniques for changing and modifying behavior (Prashant dongre, 2022). The SCT model is used to assess information technology usage by incorporating several factors such as self-efficacy, performance expectations, anxiety, affect, and personal result expectations (Prashant dongre, 2022). This theory was established in the context of human agency and human capability, which states that humans are self-developing and that they acquire knowledge by symbolic and direct factors (Dua, 2023). The main aim of SCT is to explain how people control their behavior while achieving defined goals over time. Similarly, the Social Shaping Technology approach emphasises the key role of the social context in technology development (MacKenzie & Wajcman, 1999). For blockchain technology, personal factors will include the technical evaluation of the firm in terms of efficiency and comparison to industry standards, environmental factors will include feedback from value chain partners or customers to adopt it and behavioural factors, as a result, will include the decision about adoption, the consistency of effort and achievement of the desired objective by using blockchain technology (Dua, 2023). In relation to accounting and auditing, the feelings resulting from the improvement of personal and professional status and performance in the future, the feeling of pleasure and satisfaction versus the feeling of anxiety and dissatisfaction, and the feeling of success or failure in performing tasks, are among the factors of social and behavioral cognition that are of interest.

Technology Acceptance Model (TAM) (TAM2) (TAM3) (ETAM)

The Technology Acceptance Model (TAM) was initially presented by Fred Davis (1986), while conducting his doctoral thesis with the aim of explaining and predicting users' behaviors towards new technology. Later, in 1989, with the works developed by Davis, Bagozzi & Warshaw the TAM was finally conceptualized, where it gained visibility.

The Technology Acceptance Model intends to explain the behavior of the users of a computer system, claiming that the use of the computer system depends directly on the intention that the individual has in

using it (Almeida, 2002). The TAM model theorises that individuals' attitudes towards new technology is determined by two primary factors (Davis, 1989; Davis, Bagozzi & Warshaw, 1989). The first factor, named perceived usefulness, is defined by Davis as "the degree to which a person believes that using a particular system would enhance his or her job performance". The second factor, perceived ease of use, is defined as "the degree which individuals believe that using the system will be free from effort". These factors together determine the attitude towards using the new technology (Davis, 1989). The model's strength comes in its simplicity (Prashant dongre, 2022).

In 2000, the model was extended by Davis and Venkatesh that added several impacts to the factor perceived usefulness. The aim was to increase the understanding of user acceptance and usage of new systems. The first three impacts that were added were; subjective norm, voluntariness and image. These are reflected as social forces affecting individuals' attitude to either adopt or reject a new technological system (Davis & Venkatesh, 2000: 187). Three additional factors that were added were; job relevance, output quality and result demonstrability. These are reflected as cognitive determinants in terms of subcategories of perceived usefulness and were added because they are perceived as having impact on whether individuals accept technology (Davis & Venkatesh, 2000: 188-189) which became known as TAM2.

ETAM adds certain new factors to TAM to improve TAM's adaptiveness, explanatory power, and specificity. ETAM is a concept that has been offered in two different research. TAM2 was the first study that looked at the origins of perceived usefulness and BI. To improve the predictive value of perceived usefulness, TAM2 was proposed by adding two categories of factors to TAM: social impact (image, subject norms, and voluntariness) and cognitive (outcome demonstrability, job relevance, and output quality). As a result, TAM2 outperforms in both voluntary and required situations. The sole exception is in the case of subjective norms, which have an impact in mandated contexts but not in voluntary ones. In the second study, constructs that influence perceived ease of use were discovered. Adjustments and anchors are the two major groups of antecedents that influence perceived ease of usage. General beliefs about the usage of computer systems have been placed in the anchoring group (enjoyment and objective usability), whereas beliefs created based on direct experience with a system have been placed in the adjustments group (external control, computer self-efficacy, computer anxiety, and computer playfulness) (Prashant dongre, 2022).

The most current version is TAM 3, which presents a complete nomological network (integrated model) of the determinants of IT adoption and use by individuals (Venkatesh & Bala, 2008). Venkatesh et al. (2003) integrates multiple models such as task technology matching model, rational behavior theory, and planned behavior theory, and proposes the integration theory of technology acceptance and utilization (UTAUT). This led to TAM3, which contains all variables of the above model (Venkatesh & Bala, 2003). The TAM and its extended model are widely used to explain user acceptance of information technology.

Perceived usefulness for Blockchain will be interoperability, potential to provide a strategic advantage to the firm. Blockchain had proved its utility in financial transactions, but around operation issues, it has yet to prove itself. The perceived ease of use will include the comfort of a firm with technology and the capability to sustain the change or adoption of Blockchain technology (Dua, 2023). For Blockchain, voluntariness will be the strategic willpower to adopt its feature. It may be the affinity of the firm towards trust, transparency, robustness of the system and interoperability. Experience will imply prior feel in the context of the adoption of earlier information technologies. Subjective norms will be the same as explained earlier, and the image will be the perception among clients and customers for the remaining updates on technology. Job relevance will be harmony with the industry. Output quality and result demonstrability will mean the trust that Blockchain can provide the envisaged output on the operational and financial front

for the firm. The additional constructs indicate the social influence process and cognitive instrumental processes. Social influence processes will include subjective norms, voluntariness and image, and cognitive instrumental processes will include job relevance, output quality and result demonstrability. The construct may be reflective or formative depending upon the situation (Dua, 2023).

Technology acceptance models have been developed in response to the need for user satisfaction and as a way to predict system success. It is conceptually quite appropriate to examine Blockchain technology acceptance. Because according to the goals of the principles of accounting and financial reporting, information must have certain features to be applicable to users. As a result, the positive effect of Blockchain technology on the quality characteristics of information will confirm the usefulness of this technology in the field of accounting and financial reporting.

Unified Theory of Acceptance and Use of Technology (UTAUT)(UTAUT2)(C-UTAUT)

The Unified Theory of Acceptance and Use of Technology (UTAUT), proposed by Venkatesh, Morris, & Davis (2003), was formulated through a combination of eight models of information technology acceptance research, including Theory of Reasoned Action (TRA), Technology Acceptance Model (TAM), Motivational Model (MM), Theory of Planned Behavior (TPB), a model combining the Technology Acceptance Model and Theory of Planned Behavior, Model of PC Utilization (MPCU), Innovation Diffusion Theory (IDT) and Social Cognitive Theory (SCT). Therefore, this theory is very comprehensive and is mentioned (Venkatesh et al., 2003).

According to Venkatesh et al. (2003) Performance Expectancy, Effort Expectancy, and Social Influence were formulated to influence Behavioral Intention in the use of a technology, while Behavioral Intention and Facilitating Conditions determine Use Behavior. Individual difference variables such as Age, Gender, Experience and Voluntariness of Use were also formulated to moderate the various relationships in UTAUT.

Bouten improved the explanatory power of the UTAUT model by including compatibility beliefs produced by Karahanna and Agarwal into the UTAUT model developed by Venkatesh and Morris. It also attempts to provide a better understanding of how the UTAUT model's cognitive phenomena are created by developing and testing new boundary conditions. Because the goal of the study was to look at the relationship between compatibility thoughts and behavioral perceptions, actual usage behavior was not taken into account. Furthermore, research was cross sectional, avoiding the potential difficulty of retrospective analysis by evaluating behavioral intention rather than use behavior (Prashant dongre, 2022).

The objective of UTAUT2 is to broaden UTAUT's scope by taking into consideration the consumer use context due to the variance of the answer between the customers and organization context. UTAUT2 appends three constructs to UTAUT: Hedonic motivation (HM), Price Value (PV), Habit (HB) (Venkatesh et al, 2021).

The different compatibility beliefs introduced by Karahanna et al. (Karahanna, Agarwal and Angst, 2006) and UTAUT model which was developed by Venkatesh et al. were integrated together by Bouten in 2008 to develop this C-UTAUT model. The compatibility beliefs are taken as compatibility with preferred work style, compatibility with existing work practices, compatibility with prior experience, and compatibility with values. Furthermore, this model focuses on obtaining a thorough analysis on which ways that the cognition portion of the UTAUT model is shaped by recognizing and evaluating the new limitations.

In the context of blockchain, performance expectancy will be the confidence that blockchain adoption will gain the objective for which the stakeholders have adopted it. The effort expectancy will imply confidence that the firm will be able to

manage and utilize blockchain effectively. Social influence, in the context of blockchain, is peer pressure which a firm experiences and confirms is necessary. The facilitating conditions for blockchain will imply the availability of service providers who assist and/or guide towards blockchain transformation (Dua, 2023). Blockchain technologies currently require some technical background so it is ex pected that habit affects intention to use and adopt positively. The defined constructs are expected to be moderated by the variables: age, gender and experience; with experience being the occasion to use a technology that varies since the system was used for the first time (Venkatesh et al, 2003). Also, in terms of compatibility beliefs, we can refer to compatibility with expectations, current work procedures, experiences and values of professions when using this technology.

Technology Readiness Acceptance Model (TRAM)

Lin (2007) tried to build a model combining the TRI and TAM models to explain the user's behavior in accepting technology-based electronic services by combining the two dimensions of perceived usefulness and perceived ease; this integrated model took the Technology Readiness Acceptance Model (TRAM).

TRAM combines the general dimensions of TRI with the specific dimensions of TAM system to explain how individual readiness can affect individual interaction, experience, and use of new technology (Khadka & Kohsuwan, 2018). TRAM can explain how the personality dimension can affect a person in their interactions using new technology (Lin & Sher, 2007). Therefore, TRAM is widely used in research to determine the readiness and acceptance of an information system (Aripradono, 2021). In TRAM, there are seven variables namely optimism, innovativeness, insecurity, discomfort, perceived usefulness, perceived use and intention to use (Aripradono, 2021). TRAM is used to determine the effect of readiness on IT adoption in organizations because the factors that influence an individual's interest in using a system (intention to use) are influenced by perceived usefulness and perceived ease of use (Davis, 1989).

Task-Technology Fit (TTF)

The Task-Technology Fit Model was developed by (Goodhue & Thompson, 1995) to explain the utilisation of technology by examining the fit of technology to users' tasks/requirements. The purpose of the theory was to add to the body of knowledge on technology utilisation in the private and public contexts, which had limited explanation as to how the acceptance of technology contributes to individuals' performance. TTF was the first theory that aimed to explore the post-adoption aspect of technology utilisation, unlike other prior research, which had mainly focused on the antecedents of use and intention.

The Task-Technology Fit (TTF) acceptance model suggests that the user will accept a new technology when it is efficient enough to fulfill everyday tasks. Hence, accepting the new information system largely depends on the user's daily routine tasks (Goodhue & Thompson, 1995). The fit between the task at hand and the support provided by the technology to address it is a critical determinant of the system's success. In the TTF model, 'task-technology-fit' is defined as the degree to which the functionality of a technology matches the task as well as the abilities of the individual who performs the task. This model uses four concepts of task features, technological features, task-technological fit, use, and acceptance. The task features and technological features determine the task-technological fit, which leads to the acceptance and use of the information system (Goodhue & Thompson, 1995). The TTF analysis shows that blockchain characteristics of transparency, immutability and programmability are very useful for addressing the tasks that need to be performed while meeting user needs. However, additional characteristics, such as automation, user-experience design, and communication support also need to be provided (Chaudhuri et al, 2022).

Model of Acceptance with Peer Support (MAPS)

The model is one of the comprehensive models, and it used seven constructs, namely behavioural intention, system use, facilitating conditions, network density, network centrality, value network centrality and valued network density. This theory states that an individual's social network with the employees of an organisation impacts the acceptance of the technology (Dua, 2023). The Model of Acceptance with Peer Support (MAPS) combines past research on people with relevant social network components in a way that helps to broaden the reach of earlier ideas. According to the authors, there are two sorts of social relationships. The first link between employees is seeking assistance from coworkers, which can lead to increased knowledge on how to use the system. Another type of connection that exists between employees is that of assisting and assisting coworkers to improve their grasp of system configuration and deployment (Prashant dongre, 2022). In the context of blockchain as per this theory, the behavioural intention will be the probability of adoption of blockchain applications by a firm, and system use will mean utilisation and requirement by clients and customers. The facilitating conditions will be the availability of technology at affordable prices and the skill of the vendor providing the blockchain transformation. Network density will be the percentage of peers using blockchain. Valued network centrality for blockchain will refer to the perception of clients and peers that blockchain is essential to stay in business. Valued network density for blockchain will imply its adoption by other value creators such as suppliers, distributors and other value creators (Dua, 2023).

Initial Trust Model (ITM)

Initial trust model (ITM) was termed as "the intent to use trust by customers to meet requirements in the absence of experience or reliable, in-depth information (Kim and Prabhakar, 2004). In other words, Initial trust means a person's desire to risk to meet a particular need without prior experience or credible and meaningful information (McKnight & Chervany, 2001). Thus, Kim et al. (2009) built ITM, in which the initial trust of m-banking could be explained by structural assurance, personal propensity to trust, and firm reputation. The convenient, flexible, and perceived benefits such as the role of service efficiency are related to the formation of initial trust (Koufaris & Hampton-Sosa, 2004). When users have little or no experience and want to accept new services, the initial trust plays an important role (Kim, Shin, & Lee, 2009). The role of initial trust in e-commerce is associated with the areas such as online shopping (Lowry, Vance, Moody, Beckman, & Read, 2008) and mobile banking services (Mallat, Rossi & Tuunainen, 2004) that extensive research has been done in this area. Based on this, in the field of blockchain and process automation, the factors that create trust to accept and use this technology can be seen in relation to performance expectations, facilitating conditions, legal and technical guarantees, risk-taking, and a person's willingness to trust, advertising and the reputation of this technology.

Methodology

This research is based on a theory-oriented approach, the purpose of which is to explain a complete interdisciplinary theoretical framework in the field of blockchain technology. For this purpose, a comprehensive search and review of 137 library resources was conducted. The results of this survey have been analyzed using Atlas.ti v9 software and coding method.

Conclusions

The review of the literature on the subject led to the identification of 38 interdisciplinary theories and models related to effective and affected in finance, accounting and auditing, of which 26 are pure and different from the others. Based on this approach, the figure below shows the connections resulting from this analysis.

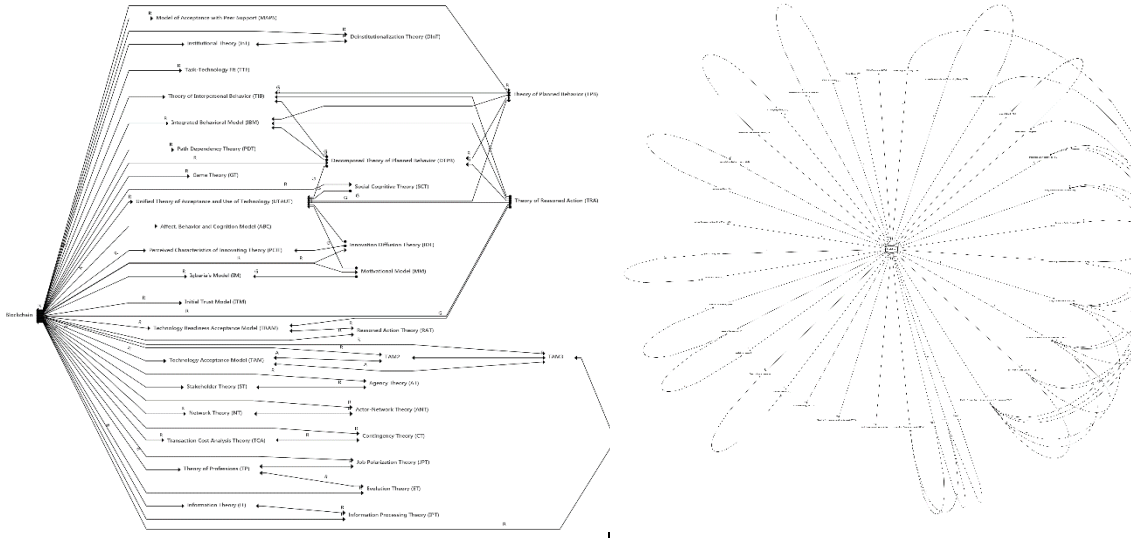

Figure 1: Theoretical connections of accounting and auditing perspectives in the context of blockchain technology (Atlas.ti v9)

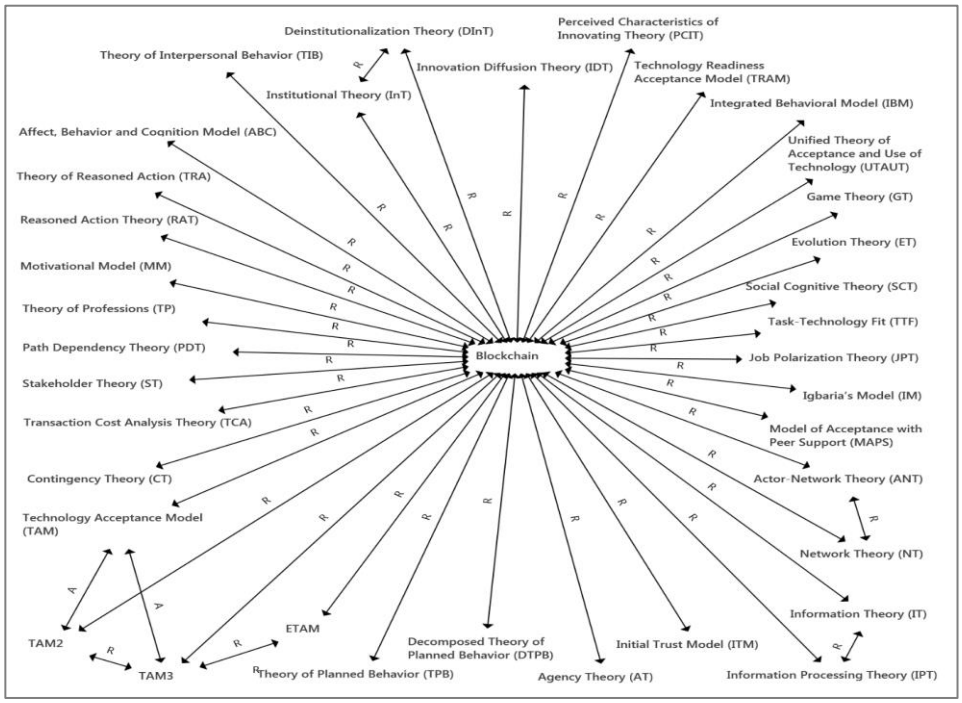

Figure 2: The explanatory theoretical framework of accounting and auditing in the context of blockchain technology (Atlas.ti v9)

Based on this approach, the figure below depicts the initial theoretical framework resulting from this analysis.

This model includes processes, tools, emotions, feelings, beliefs, attitudes, motivations, conditions, value, importance, necessity, dependence, preference, individual factors, social factors, economic factors, political factors, contextual factors, and professional principles in the fields of financial, accounting and auditing covers the past, present and future. Next, in order to understand better and more usefully, this theoretical framework was ordered and structured; the figure below shows the model of the theoretical framework resulting from the research.

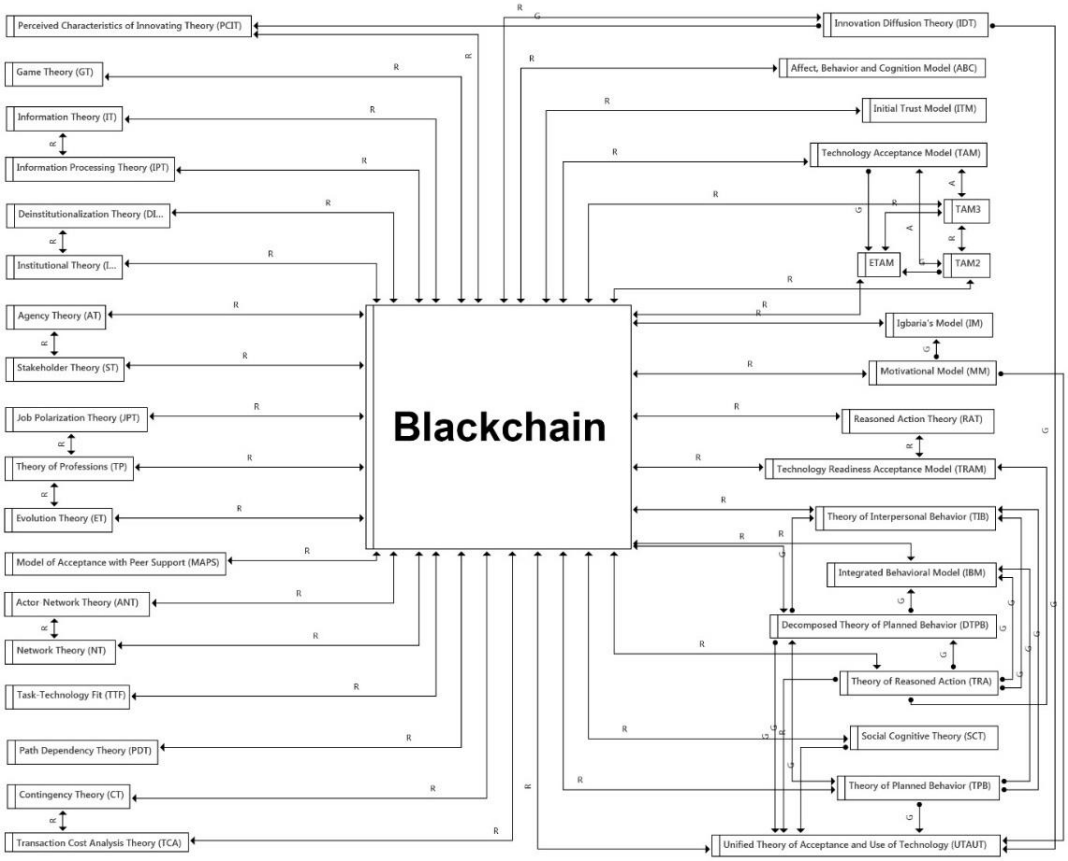

Figure 3: Theoretical framework of blockchain technology (Atlas. ti v9)

The framework designed in this research based on the norms, expectations and demands of the society as well as the features and performance of blockchain technology has been able to cover many technical, cultural, social, economic, political and contextual factors with a mixed view and systemic thinking.

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